

Future is Blowing in the Wind

Hermann Fasel's research creates safe, efficient, and environmentally friendly aircraft

Hermann Fasel, professor of aerospace and mechanical engineering, directs the Computational Fluid Dynamics Laboratory and the Hydrodynamics Laboratory. Since 2002 he has secured nearly 30 research grants and currently has active funding of more than \$5 million. Fasel leads research team in areas such as laminar-turbulent transition, flow control, aerodynamics and dynamically scaled flight testing of aircraft.



Professor Hermann Fasel

At the fundamental level, Fasel's research focuses on how fluid dynamics phenomena influence the efficiency and safety of vehicles in the air, on land, or under water. His research in computational fluid dynamics requires massive computer simulations that are only possible with the nation's most powerful supercomputers at the Department of Defense, NASA and Department of Energy. These agencies annually provide Fasel millions of hours of computing time to conduct his research. Fasel validates the computer simulations with measurements obtained in wind tunnel, water tunnel and free flight experiments. One of Fasel's specialties is studying laminar-turbulent transition, which has a profound effect on the safety and performance of space flight vehicles. This research may lead to innovative separation and transition control concepts that could result in vehicles that can travel faster and farther at reduced cost. His research is funded by AFOSR, ONR, NASA and NSF.

His interest in fluid dynamics and sustainable engineering underpins his recent research into solar chimney power plants, horizontal axis wind turbines, and tidal power plants.